



# Volunteer Lake Assessment Program Individual Lake Reports

## NEW POND, CANTERBURY, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	101	Max. Depth (m):	3	Flushing Rate (yr <sup>-1</sup> )	1.1
Surface Area (Ac.):	29	Mean Depth (m):	1.4	P Retention Coef:	0.85
Shore Length (m):	2,100	Volume (m <sup>3</sup> ):	167,000	Elevation (ft):	821

### TROPHIC CLASSIFICATION

Year	Trophic class
1985	MESOTROPHIC
1997	MESOTROPHIC

### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

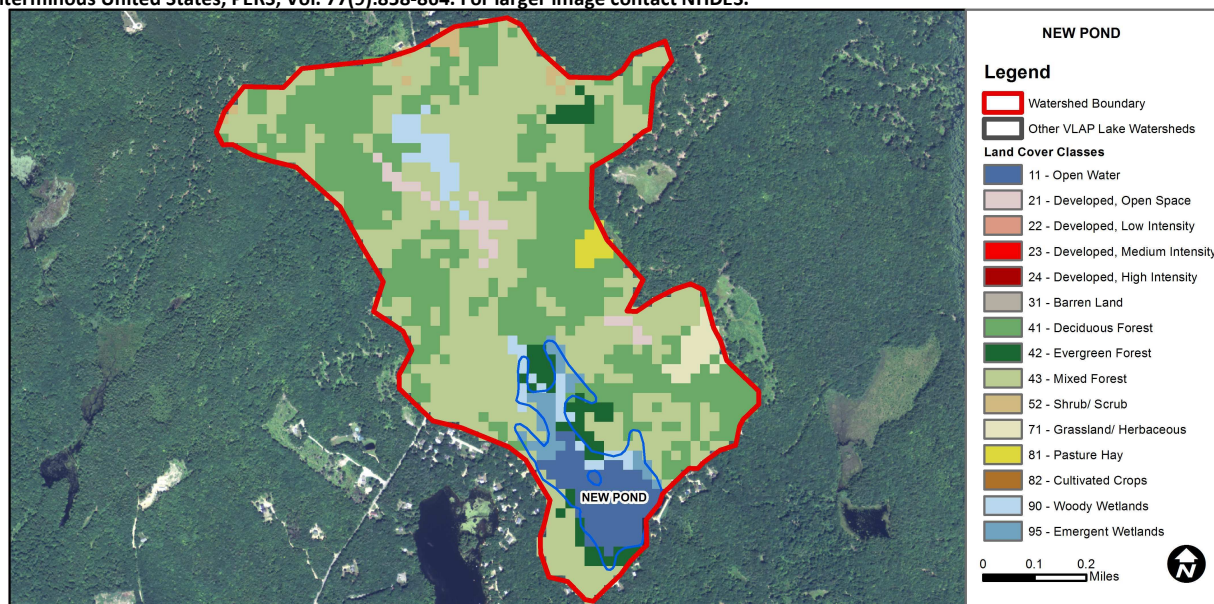
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Dissolved oxygen saturation	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.
	Chlorophyll-a	Bad	There are >10% of samples (minimum of 2), exceeding indicator with one or more samples considered large exceedance.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

NEW POND-SHERWOOD FOREST SHORES BEACH 3	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
NEW POND-SHERWOOD FOREST SHORES BEACH 2	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
NEW POND-SHERWOOD FOREST SHORES BEACH 1	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.04	Barren Land	0	Grassland/Herbaceous	1.55
Developed-Open Space	1.81	Deciduous Forest	36.04	Pasture Hay	0.84
Developed-Low Intensity	0	Evergreen Forest	3.75	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	44.63	Woody Wetlands	3.49
Developed-High Intensity	0	Shrub-Scrub	1.1	Emergent Wetlands	1.94



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

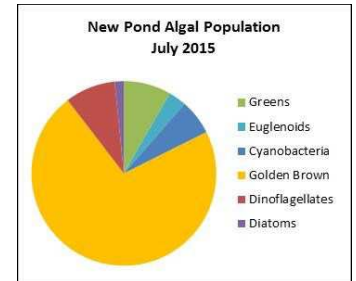
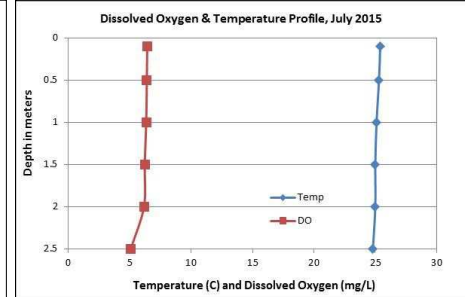
## NEW POND, CANTERBURY

### 2015 DATA SUMMARY

**RECOMMENDED ACTIONS:** The 2015 sampling season saw decreased algal growth and improved transparency, however deep spot phosphorus and turbidity levels remained slightly elevated. The dry weather conditions and lack of pond flushing may have contributed to the slightly elevated phosphorus and turbidity. Pond turbidity may be affected by water color and wetland influences. Phosphorus levels may be affected by septic systems, fertilizer use, sand dumping, and stormwater erosion and runoff into the pond. Educate watershed residents on maintaining septic systems, eliminating fertilizer use or using phosphate free fertilizers if necessary, and minimizing stormwater runoff from their properties. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for watershed residents. The worsening conductivity trend is concerning and indicates that the use of winter road salt and driveway maintenance activities may be impacting the pond. Home water softener system discharge may also contribute to the elevated conductivity through groundwater impacts. Additional investigation may be necessary as conductivity has almost doubled in the pond since 2011. Educate and encourage local road agents and maintenance companies to obtain a NH Voluntary Salt Applicator License through the UNH Technology Transfer Center's Green SnowPro Certification program. Keep up the great work!

#### OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- CHLOROPHYLL-A:** Chlorophyll levels were average in June and then decreased to low levels from July to September. Average chlorophyll levels decreased from 2014 and were less than the state median. Chlorophyll levels have decreased steadily since 2009 and we hope to see this continue. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels remained slightly elevated and greater than the state median. Epilimnion (upper water layer) and Shaker Rd. chloride levels were slightly greater than the state median but much less than the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- E. COLI:** Shaker Rd. E. coli levels were low and much less than the state standard for surface waters (406 cts/100 mL).
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus was slightly above average for NH lakes, remained stable from June to July and increased to slightly elevated levels in September. Average epilimnetic phosphorus was slightly greater than the state median and stable with that measured since 2013. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. Outlet phosphorus was slightly elevated in July and the turbidity of the sample was also elevated. Shaker Rd. phosphorus was slightly elevated in June but within an average range for that station under normal flow conditions.
- TRANSPARENCY:** Transparency remained stable from June to July and decreased slightly in September. The Secchi disk was visible on the pond bottom in July, and average transparency was the best measured since 2008. Historical trend analysis indicates highly variable transparency since monitoring began.
- TURBIDITY:** Deep spot turbidity was slightly elevated on each sampling event, potentially due to algal growth or the water's color as water rich in dissolved organic matter typically has a darker color that can cause an increase in turbidity. Outlet turbidity was elevated in July likely due to low flow conditions and Shaker Rd. turbidity was average in June.
- PH:** Epilimnetic pH was within the desirable range 6.5-8.0 units however has historically fluctuated below the desirable range. Historical trend analysis indicates stable epilimnetic pH with moderate variability since monitoring began.



Station Name	Table 1. 2015 Average Water Quality Data for NEW POND									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli MPN/100ML	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	10.8	3.75	17	94.9		16	2.32	2.67	1.93	6.72
Hypolimnion				95.9		15			1.94	6.62
Outlet				90.8		26			5.12	6.64
Shaker Rd.			18	94.2	8.5	24			1.01	6.45

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

